Reading Toolkit: Grade 8 Objective 2.A.4.d

Student Handout: Reading: Grade 8 Objective 2.A.4.d

Standard 2.0 Comprehension of Informational Text

Topic A. Comprehension of Informational Text

Indicator 4. Analyze important ideas and messages in informational texts

Objective d. Summarize or paraphrase

Assessment Limits:

The text or a portion of the text

Selected Response (SR) Item

Question

Read this article titled "This Tongue Gets a Grip." Then answer the question below.

Which of these sentences would be *most* important to include in a summary of this article?

A. A chameleon's skin feels bumpy.
B. Many animals use jaws or claws when catching prey.
C. Scientists watch movies in slow motion to study lizards.
D. A chameleon's tongue has a supermuscle.

Correct Answer

D. A chameleon's tongue has a supermuscle.

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Handouts

This Tongue Gets a Grip

by Mariana Relós

[1]Chameleons may look grumpy and their skin may feel bumpy, but scientists can't take their eyes off them. Why? Because chameleons are such interesting lizards.

[2]Not only do chameleons have an amazing talent for changing colors, they also have one of the fastest and most powerful tongues in the animal kingdom.

[3]Chameleons spend a great deal of their lives sitting still. But they are experts at catching fast moving insects for food. And chameleons are unusual in the way they get their food. They don't use jaws or claws to catch their prey, as many animals do. Chameleons use their fast and powerful tongues.

An Extraordinary Tongue

When a chameleon is hungry, it sits still on a tree branch. With one eye it looks back over its shoulder, and with the other eye it checks the branches ahead. There it is—lunch!

When a chameleon finds something tasty, such as a cricket, the lizard fixes both eyes on it. Then the chameleon opens a gap in its mouth and *slap!* In one-fiftieth of a second, the lizard's tongue shoots out, catches the prey, and snaps back into the mouth.

Chameleons can perform this amazing trick because they have an extraordinary tongue. It is not short like ours. It is about one-and-a-half times as long as the chameleon's body.

One of the first questions scientists asked about chameleons was, "How do they move their tongues so fast?" And the answer is, powerful muscles. Two strong muscles inside the tongue move it in and out of the mouth. One of these muscles makes the tongue shoot out of the chameleon's mouth with lightning speed. And when the other muscle contracts, it brings the tongue back into the mouth. Scientists call this second muscle a "supermuscle" because it can pull much harder than a normal muscle.

Sticky Tongues

But how does the tongue grab the prey? Two things give the tongue its super grip. The first is a sticky kind of mucus, a goo that covers the tongue. The second is a rough surface.

The chameleon's tongue has a lot of tiny bumps, pits, and ridges. A rough tongue, covered in sticky mucus, can easily grab the crickets and flies that small chameleons eat.

Little crickets and flies seem to be enough lunch for a small chameleon. But large chameleons, which are as big as small cats, can eat bigger prey. Scientists have seen large chameleons trap and eat birds and lizards that weigh as much as 15 percent of the chameleon's weight. This would be like an 80-pound kid snapping up a 12-pound beef roast using only his tongue!

[10]Even a rough, sticky tongue cannot hold on to such big prey, and yet some chameleons can do it. One team of scientists decided to find out how. The group was led by Dr. Anthony Herrel at the University of Antwerp in Belgium and Dr. Jay Meyers at Northern Arizona University.

[11]The scientists closely watched chameleons eat. But the chameleon's tongue catches food too fast for a person to see how it is done.

Discovering the Secret

How could the scientists slow down the action? They used high-speed film to take moving pictures of chameleons feeding. Then they watched the movie in slow motion.

The movie showed that just before the tongue touches the prey, muscles on each side of the chameleon's tongue pull inward on the tongue's tip. This pulling makes a small bag or pouch on the tip that works likes a suction cup. Mucus and the tongue's rough surface help seize the prey while the pouch surrounds it. Finally, the tongue yanks the prey into the mouth.

The scientists figured that about 70 percent of the tongue's holding power comes from the suction-cup effect. The rest of the power in the grip comes from the rough surface of the tongue and the sticky mucus.

Why is suction power useful to a chameleon? Dr. Herrel explains: "The suction power lets the animals capture much larger prey than would be possible using sticky forces alone." Instead of hunting for many small meals to calm its appetite, a hungry chameleon can fill its empty stomach with one big meal, using the power of suction.
